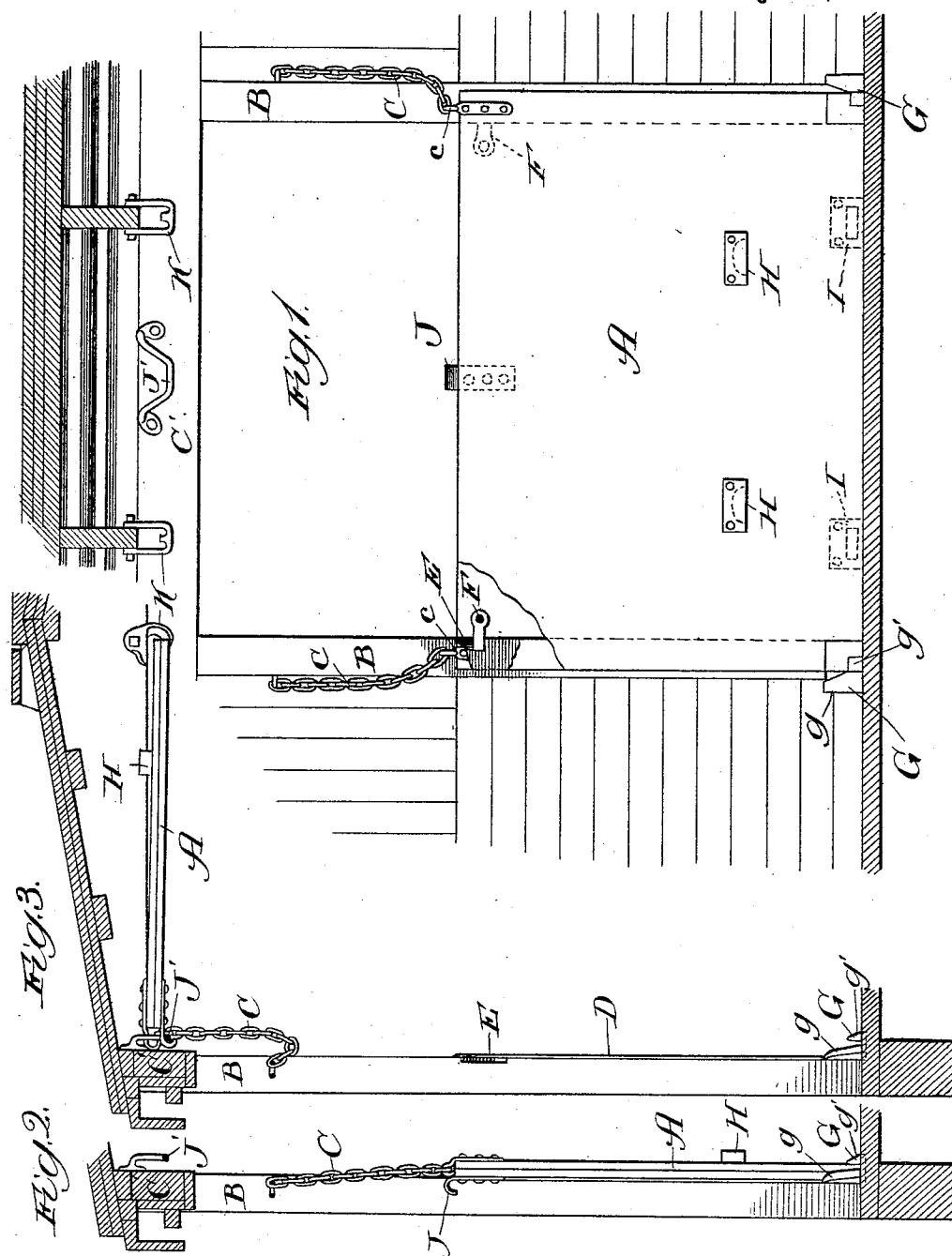


(No Model.)

W. S. SCHROEDER.
GRAIN CAR DOOR.

No. 475,422.

Patented May 24, 1892.



Witnesses:

Clifford A. White.

Inventor:

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UNITED STATES PATENT OFFICE.

WILLIAM S. SCHROEDER, OF CHICAGO, ILLINOIS.

GRAIN-CAR DOOR.

SPECIFICATION forming part of Letters Patent No. 475,422, dated May 24, 1892.

Application filed July 10, 1891. Serial No. 398,994. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM S. SCHROEDER, a citizen of the United States, residing at Chicago, Cook county, Illinois, have invented a certain new and useful Improvement in Grain-Car Doors, of which the following is a specification.

These grain-car doors fill up somewhat more than half of the doorway in the side of the car and are usually supported at their ends by means of the side posts. Therefore when the car is loaded with grain a constant outward pressure is exerted against the door, and this being unyieldingly supported at its ends yields or gives in the middle, springing outward in a manner tending to give it a permanent set or bend, thereby interfering with the efficient operation of the door and bending outward sometimes to such an extent as to interfere with the sliding of the outer or main door of the car. It is evident that it will be impossible to prevent this outward bending of the grain-door by the pressure of the grain, and some means is therefore desirable for counteracting the "set" resulting from such bending. This means it is the object of my invention to furnish, and to that end I construct a door of suitable size and dimensions and provide means for supporting this door when not in use in such manner that the weight of the door will tend to bend the same in the opposite direction from that in which it is bent when in use. In other words, when in use the door is bent outward by the grain, and when suspended in a position of non-use is bent backward by its own weight, so as to remain substantially flat and true.

My door is, furthermore, exceedingly simple and economical to construct, and is provided with simple and efficient means for locking it in place when in a position for use, which locking mechanism is easily operated to unlock the door when it is desired to raise the same out of the way; and my invention consists in the features and details of construction hereinafter described and claimed.

In the drawings, Figure 1 is an elevation of part of the side and roof of the car, showing the grain-door in position for use, taken from the inside of the car looking outward through the doorway. Fig. 2 is a vertical section

thereof; and Fig. 3, a similar section showing the door raised and stowed away in the roof in the position which it occupies when not in use.

The door A is made of any suitable dimensions and in any desired manner—as, for instance, it may be made of slats fastened together and braced by means of cross-bars, or any other suitable mode of construction may be employed that will form a door of the desired size and strength.

This door is fastened to the side posts B by means of chains or ropes C, as shown, which, while preventing the door from being lost out of the car, allow it to be freely moved, in order to raise it out of the way or bring it down into position for use, as hereinafter described. These chains are attached to the door by means of plates c, the projecting ends of which abut, when the door is raised into the position shown in Fig. 3, against the side plate C' of the car.

A metal wear-plate D is preferably attached to the inner side of each of the side posts B, as shown in Fig. 3, and in each of these posts is formed a recess or mortise E, adapted to engage with a pivoted button or fastening-block F. One of these blocks is pivoted at each side of the door at a point preferably near the top thereof and they are adapted to swing down into and up out of the recesses or mortises E. I next make blocks G, preferably in the form shown in the drawings and adapted to be secured to the floor and frame of the car to prevent the bottom of the door from moving sideways or into the car, the rib g engaging, as shown, with the edge of the door and the lug g' resting against the inside thereof, there being one of these blocks at each side of the door. The door is also provided with handles H at any suitable point and with pinch-bar plates I near the bottom of the door, into which bars may be inserted when the door is to be pried up.

To the top of the door I attach one or more hooks J, adapted to engage when the door is raised with a loop or loops J', attached to the side plate of the car, as shown in Fig. 3. I also provide hooks K, preferably two in number and preferably in the form shown in the drawings, being pivoted to the car-lines.

The door being constructed and the parts put together as already described operates as

follows: Supposing the door to be in the position shown in Figs. 1 and 2, if it is desired to raise it the buttons are swung around out of the recesses and the door then lifted by its handles and the hook J inserted into the loop J'. The door is then swung up into the car, the hooks engaging, as shown, with the pinch-bar plates, the door being supported at one end by the loop and at the other by these hooks. When it is desired to lower the door, the hooks are swung out of the way, the door swung around on the loop, and then disengaged therefrom and lowered, the lower edges of the door engaging with the blocks G and the door resting against the sides of the posts B. The buttons are then swung around into the recesses, the door being held firmly in place by means of these buttons and blocks.

It will be noted that when the door is in position for use, as shown in Fig. 1, the pressure of the grain will tend to bend or bulge out the center of the door, and particularly near its upper edge. When, however, the door is suspended from the roof, as shown in Fig. 3, it is only supported at one point near the middle of the upper edge—viz., by means of the hook J and loop J'. Accordingly the door will tend through its weight to bend downward at the corners, at which are situated the pivoted buttons F, bending down at each side away from the hook J, bending the door in the opposite direction from which it is bent when in use, and thereby tending to straighten the door and overcome or counteract the set which it has received when in the position shown in Fig. 1. It will also be noticed that when the door is raised the ends of the plates c abut against the side plate, and thereby prevent any rocking or sideways movement of the door, which would tend to loosen it from the hooks K.

Although I have described more or less pre-

cise forms, it will be understood that I do not intend to limit myself thereto, but contemplate the use of equivalents and changes of form or number of the parts, as may be desirable or necessary.

I claim—

1. The combination of a grain-door, swinging hooks adapted to engage with and support the lower edge of such door when the same is raised, and a hook in the upper edge of such door adapted to engage with a suitable loop, the door when raised being supported by such hook and loop at a point substantially at the middle of its upper edge, the door hanging with that face downward which is toward the outside of the car when the door is closed, whereby the weight of the door tends to cause it to bend in the opposite direction from which it is bent in use, thereby counteracting the bending of the door caused by the load, substantially as described.

2. The combination of a grain-car door connected to the car by chains or ropes, plates attached to such door to which the chains are fastened, such plates extending out from the edge of the door and adapted to bear against the side of the car when the door is raised into a position for non-use, a hook and loop, the hook being attached to the upper edge of the door between the plates for supporting the upper edge of the door when so raised, and swinging hooks for supporting the lower edge, the plates preventing any sidewise movement of the door that would tend to disengage the same from the swinging hooks, the door hanging with that face downward which is toward the outside of the car when the door is closed, substantially as described.

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Witnesses:

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